



# Marine Life Protection Act Initiative



## Water Quality in the MLPA South Coast Study Region

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**Presentation to the MLPA South Coast Regional Stakeholder Group  
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# Southern California Bight

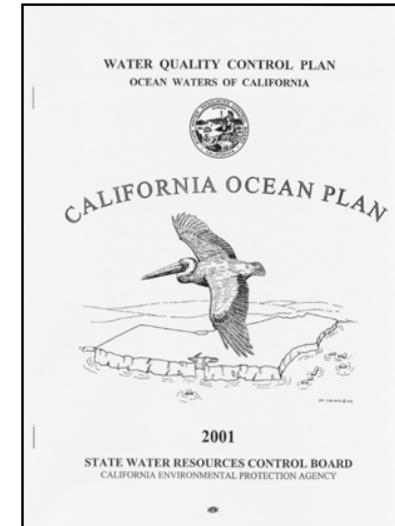
- 17 million people living within coastal watersheds
- Much of coastal land use is urban and industrial
- Busy coastal ocean:
  - ports and marinas
  - dredging and ocean disposal
  - commercial shipping
  - military bases and operations
  - offshore oil drilling/production





# California Ocean Plan (COP)

- EPA-approved water quality control plan
  - Standards for ocean waters to three mile limit
  - Discharges outside are regulated to ensure “no violation” within state waters
  - Beneficial uses of ocean waters – human health and marine life receptors
  - Water quality objectives
  - Program of implementation
  - Areas of special biological significance (ASBS)
- Triennial reviews
- Amendments in progress





## Areas of Special Biological Significance

- ASBSs are water quality opportunities
- 16 in southern California, 6 mainland and 10 island
- All ASBS are marine managed areas - state water quality protection areas
- Waste discharges are prohibited
- 2003 survey found storm water and other discharges
- Currently being regulated to maintain “natural water quality”
- Natural Water Quality Committee and ASBS Monitoring  
[http://www.waterboards.ca.gov/water\\_issues/programs/ocean/asbs\\_nwqcommittee.shtml](http://www.waterboards.ca.gov/water_issues/programs/ocean/asbs_nwqcommittee.shtml)



## Discharges

# Discharges into the Southern California Bight

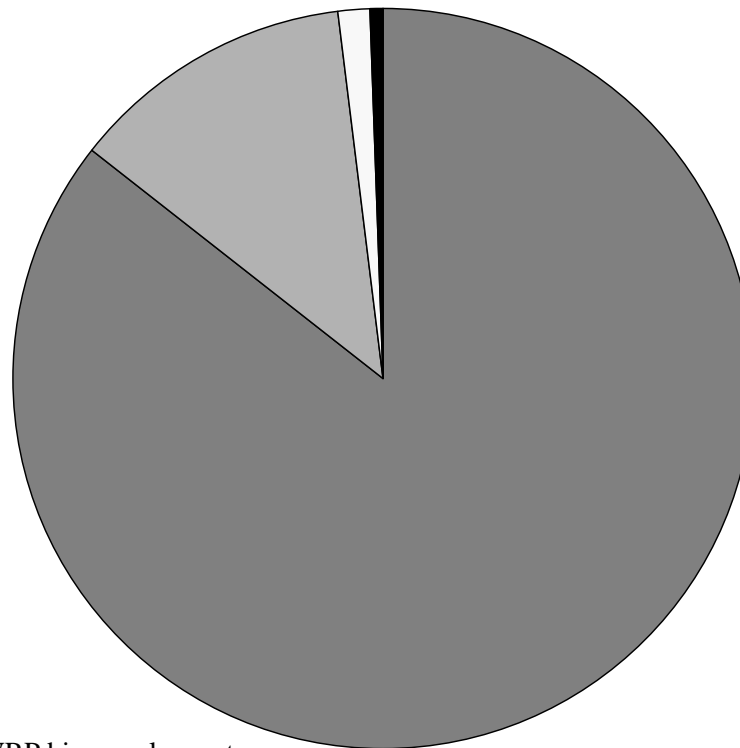




# National Pollutant Discharge Elimination System

## NPDES Waste Water Permits

### Waste water sources:



- Power Plants  
(7120 mgd)
- Large Publicly Owned  
Treatment Works  
(1049 mgd)
- Small Publicly Owned  
Treatment Works  
(116 mgd)
- Offshore Oil Production  
(34 mgd)
- Laboratory and Industrial  
(9 mgd)

Data Source: SCCWRP bi-annual reports  
2001-2006



# Power Plants

6.3 billion gallons per day

- Entrainment and impingement, regulated through National Pollutant Discharge Elimination System permits
- Thermal wastes
- In-plant wastes (sewage, chemicals - varies by plant)
- Much greater volume but generally much lower loading than publicly owned treatment works (POTWs)





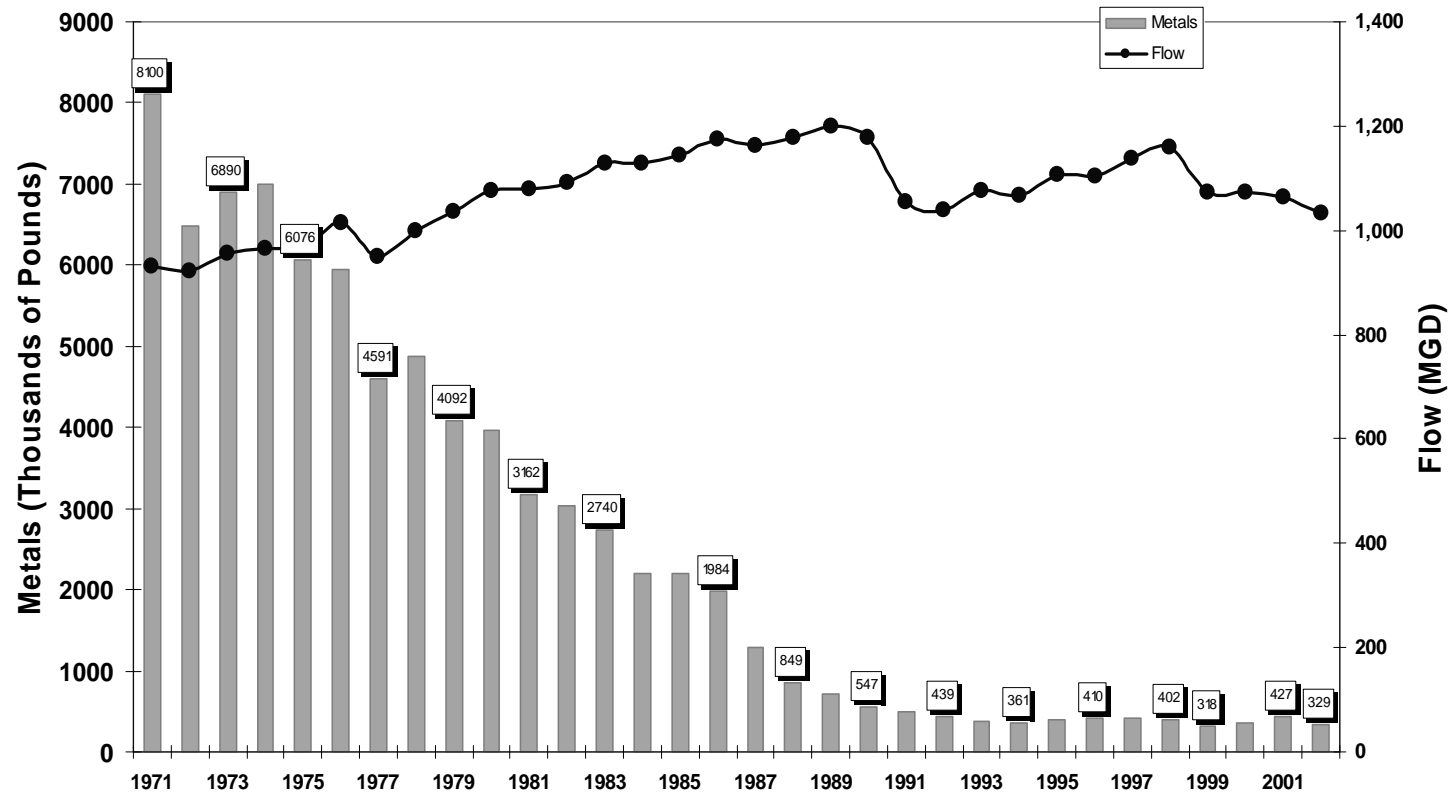
## Publicly Owned Treatment Works

- Four large POTWs
  - Los Angeles City (Hyperion) secondary treatment
  - Los Angeles County (White Point) secondary treatment
  - Orange County - primary treatment with chlorination
  - San Diego (Point Loma) - primary treatment to begin chlorination
- 15 small POTWs directly discharging to bight
  - International waste water plant (Tijuana)
- Other small POTWs discharge to coastal streams



# Historical Metal Discharge Rates

Pounds (in thousands) of Metals (Cd, Cr, Cu, Pb, Hg, Ni, Ag, Zn) Discharged Southern California 1971-2002



Data Source: SCCWRP and Discharger Self Monitoring Reports



# Offshore Oil Drilling and Production

- Most in federal outer continental shelf, some in state waters
- Small volume and loading in comparison to publicly owned treatment works
- Wastes streams include produced water, sanitary wastes, drilling mud and cuttings





# Oil Spill Threats


- 
- An aerial photograph of the ocean showing a long, curved containment boom or skirt floating on the water's surface. A large oil tanker ship is visible in the upper left portion of the image, moving towards the boom. The water is dark and choppy.
- Tankers and other shipping
  - Military operations
  - Offshore platforms
  - Pipelines
  - Onshore oil production
  - Refineries and terminal

Photo Courtesy: OSPR

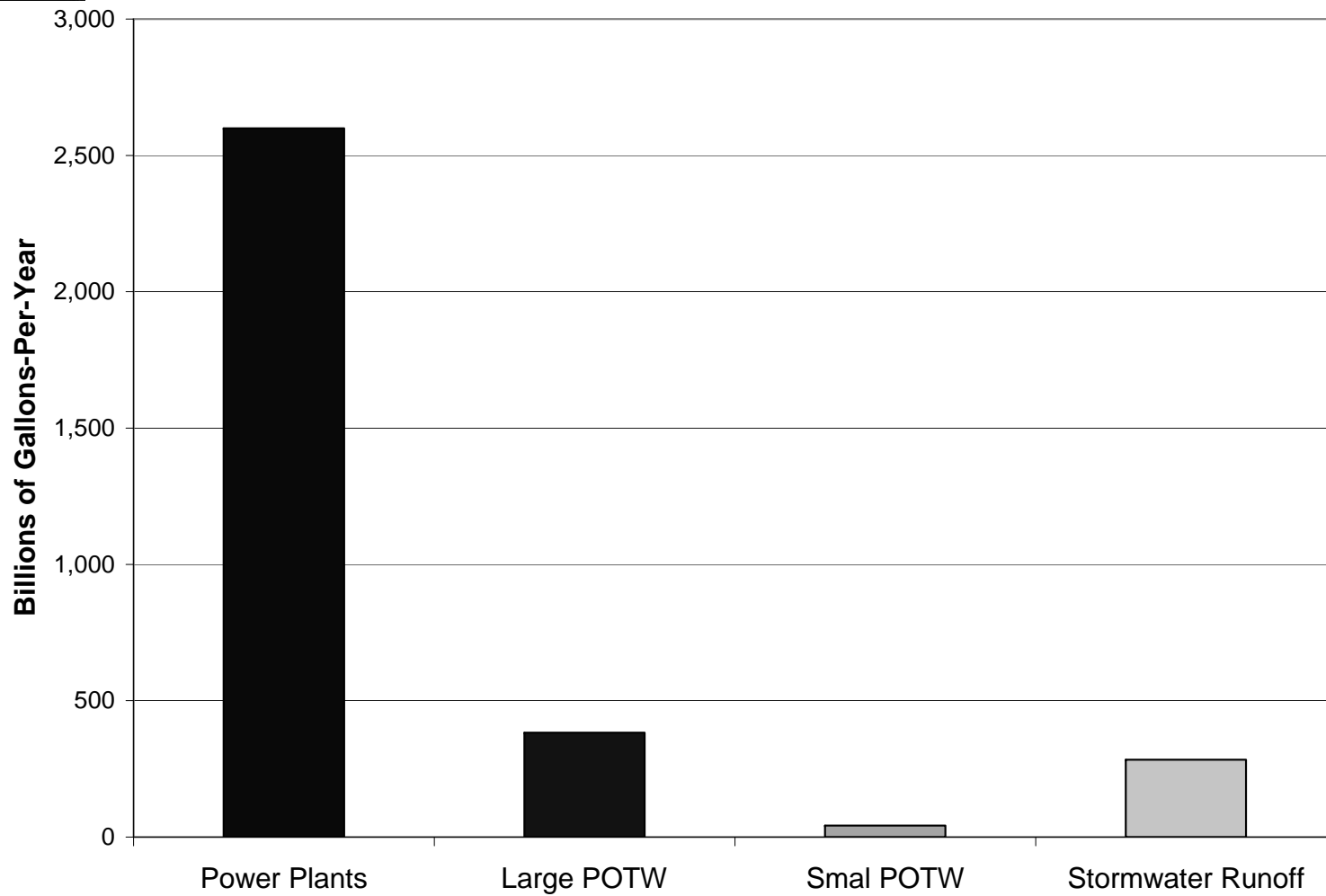


## NPDES Storm Water Permits

- Phase I and Phase II Municipal Permits
- Caltrans Statewide Permit
- Industrial and Construction General Permits



# Discharge Comparison





## Typical Annual Storm Water Runoff

| Land Use       | Gallons<br>(billions) |
|----------------|-----------------------|
| Urban/suburban | 217                   |
| Agriculture    | 11                    |
| Open space     | 56                    |
| Total          | 284                   |

Annual volume comparable to POTWs, but largely untreated



## Storm Water Considerations

- Pollutants include trash/plastic debris, heavy metals, nutrients, PAHs, pesticides, pathogens and others
- Dry weather flow
- Atmospheric deposition - air pollution and transportation sources





## Effluent Dominated Streams

- Discharges from publicly owned treatment works and industries, dry weather runoff, and storm water
  - Examples from southern L.A. County:
    - Los Angeles River
    - Dominguez Channel
    - San Gabriel River





# Land/Sea Interaction, Storm Run-Off





## Commercial Vessel Discharges

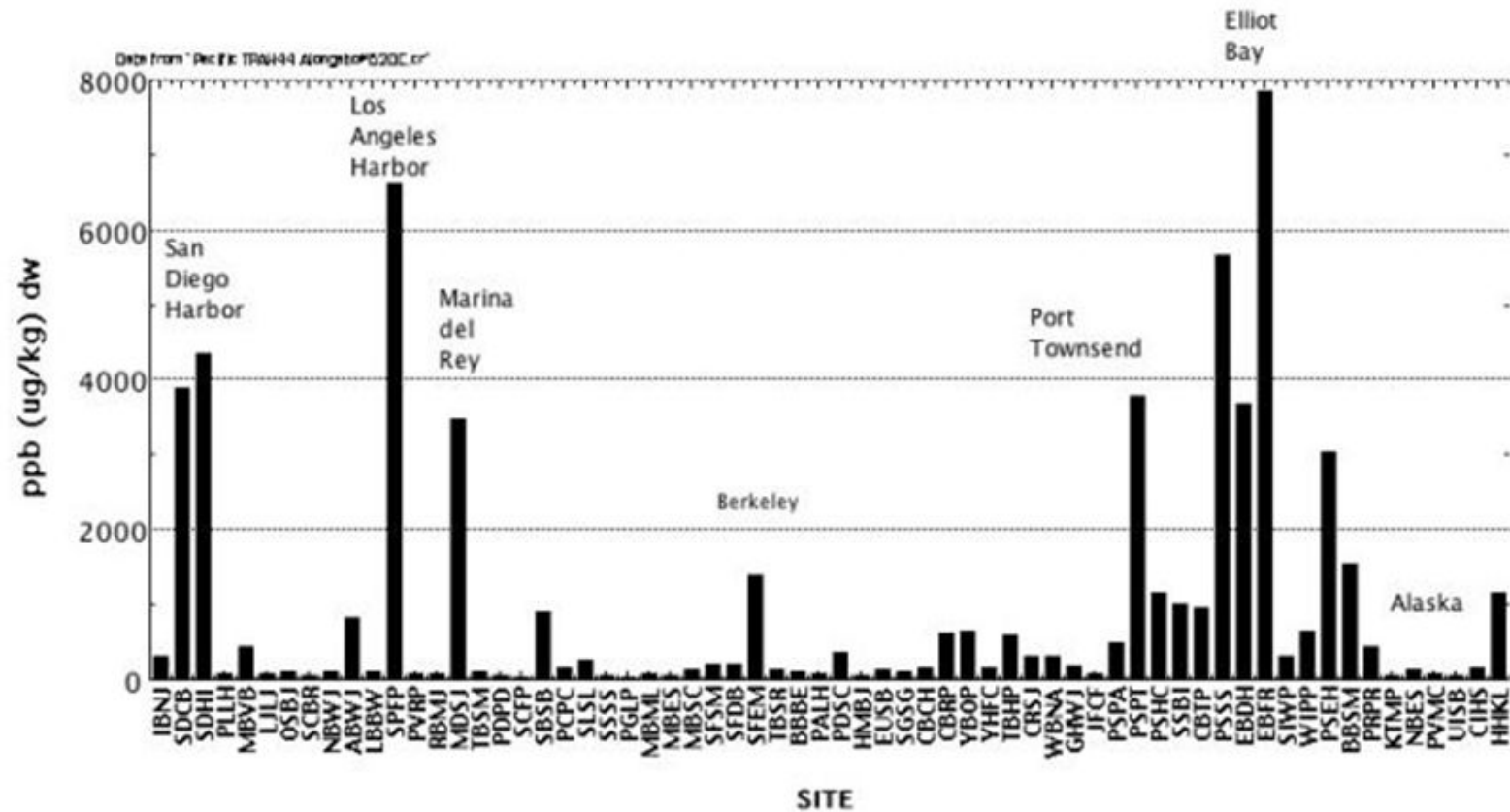
- Ballast water- non-indigenous species introductions
- Graywater – source of pathogens and other pollutants
- Sewage disposal
- SB 771 prohibitions on certain vessel wastes – cruise ships and 300 gross ton vessels
- US Environmental Protection Agency Vessel General Permit



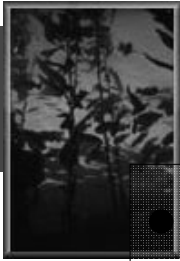
# Eutrophication

- Harmful Algal Blooms
  - Domoic acid poisoning
- Hypoxia
  - More pronounced threat in enclosed bays than in coastal waters
- Monitoring Efforts
  - HABMAP
  - SCCWRP Bight '08 Nutrient Study

# Mussel Watch Total PAH (44) '01- '02

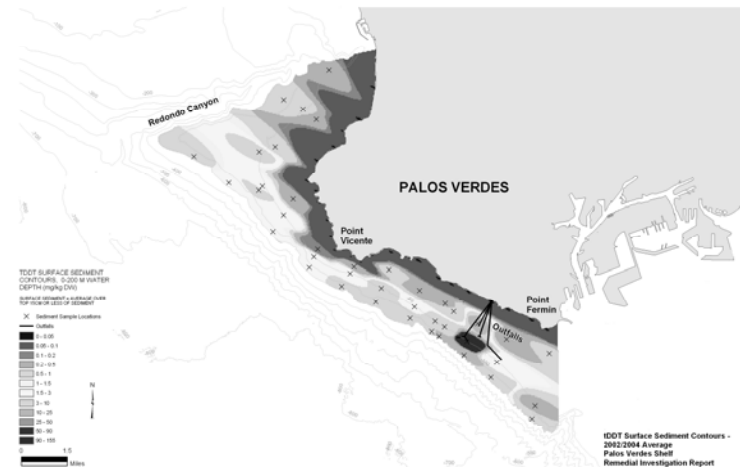


Courtesy of A. Mearns and G. Lauenstein, 2007



# Sediment Pollution

- Legacy pollutants
  - DDT, PCB
  - Persistent
  - bioaccumulation
- DDT at White Point
- Sediment pollution in bays and estuaries
  - Heavy metals, persistent organics
  - Maps at [http://www.waterboards.ca.gov/water\\_issues/programs/bptcp/docs/sediment/072208\\_appendix\\_d.pdf](http://www.waterboards.ca.gov/water_issues/programs/bptcp/docs/sediment/072208_appendix_d.pdf)
- Harbor dredge spoils discharged offshore



Data Source: EPA 2008. <http://www.epa.gov/region09/waste/sfund/pvshelf/>.



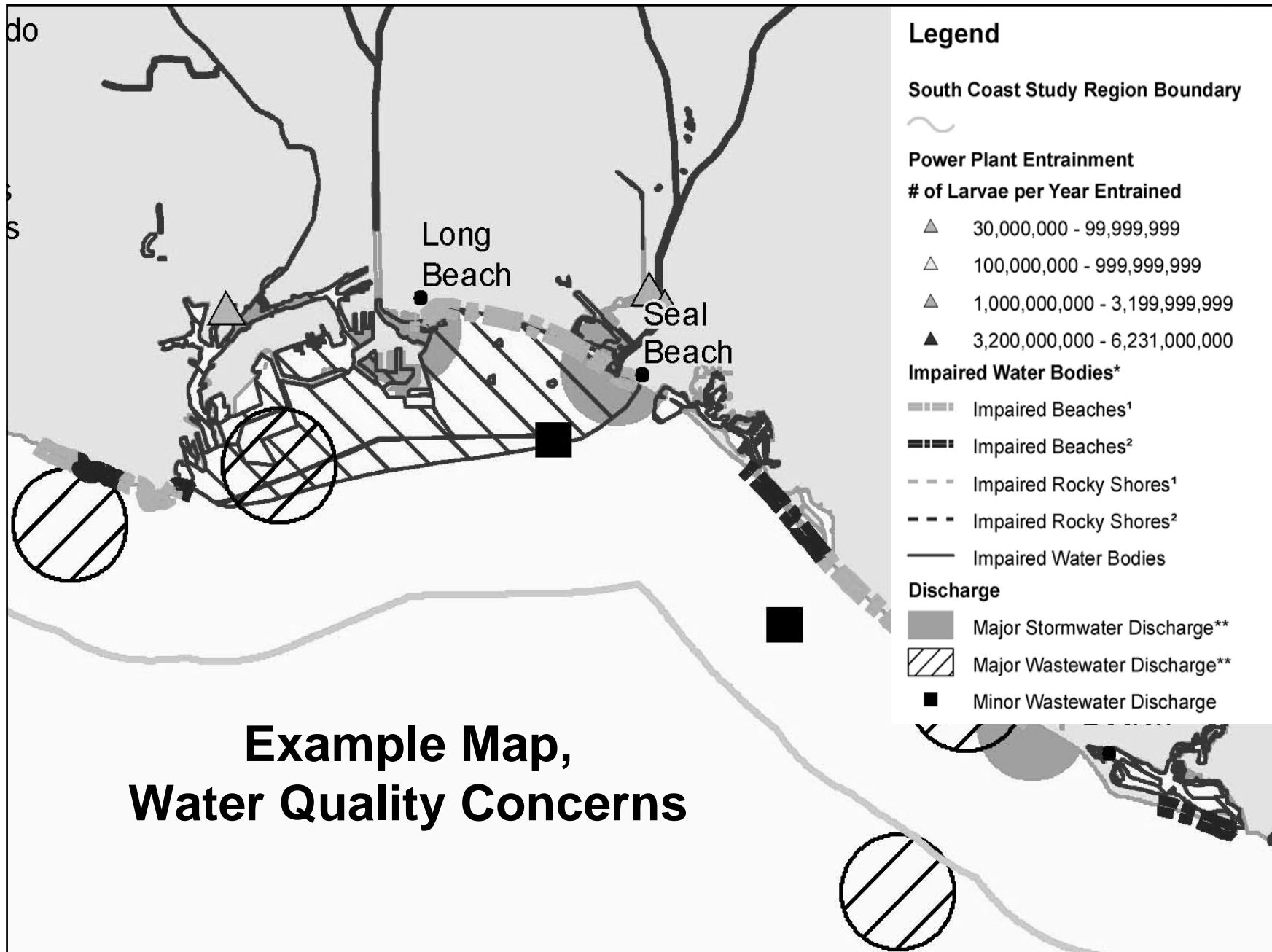
## Emerging Issues

- PBDEs flame retardants
- New pesticides (e.g. pyrethroids)
- Endocrine disruptors and other pharmaceuticals
- Climate Change
  - Global issue
  - Sea level rise and temperature
  - Ocean acidification
    1. Ocean Plan standards: (no more than 0.2 ph unit change allowable from “natural”)



## Opportunities and Concerns

- Water Quality Opportunities
  - ASBS
- Major Water Quality/Industrial Concerns
  - Power plant intakes and discharges
  - Large storm drains
  - POTW and industrial waste water outfalls







## Next Steps

- Potential SAT approval of maps, guidance document, and evaluation process
- Maps may show areas of water quality concerns, and water quality opportunities; the guidance document will expand on this
- Evaluation process may consist of qualitative scoring system
- Three areas may be identified by SAT as of particular concern:

\*South Bay Power Plant Intake may be discontinued in the future due to lease status.